Opioid Abuse and Barriers to Treatment with Buprenorphine: An Exploration & Policy Analysis

By

Michael Robinson

A Master's Paper submitted to the faculty of the University of North Carolina at Chapel Hill Gillings School of Global Public Health in partial fulfillment of the requirements for the degree of Master of Public Health in the Public Health Leadership Program.

Chapel Hill

2017

Sue Tolleson-Rinehart PhD, Advisor and First Reader

14 July 2017
Date

Adam Zolotor MD DrPH, Second Reader

19 July 2017
Date

Abstract

Introduction: Opioid addiction and abuse continues to reach epidemic status in the United States. Many individuals who desire treatment are unable to do so. Buprenorphine is one method of Medication Assisted Treatment (MAT) that can be prescribed by any outpatient physician who completes training and obtains a waiver - however, provider uptake of buprenorphine has been low. This paper sought to examine the barriers to provider uptake of buprenorphine, as well as analyze relevant policy to help inform future solutions

Methods: A limited systematic review examining provider attitudes and beliefs surrounding buprenorphine, followed by a policy analysis with recommendations for future policy.

Results: Search strategy yielded 201 articles, 64 articles screened after duplicate removal, 19 articles assessed for eligibility and 9 articles identified for full review. Key barriers identified included stigma towards addiction population, lack of support & resources, as well as lack of training. The role of Medicaid, the Affordable Care Act, and other legislation and policies in substance abuse treatment and buprenorphine adoption was discussed.

Conclusion: Despite growth in the number of waivered physicians, crucial barriers towards physician adoption of buprenorphine remain. Training early in a clinician's career, increased financial remuneration for addiction treatment, and other programs to facilitate provider support might be essential towards changing the culture and attitudes of providers towards the addiction population and promoting buprenorphine use.

Acknowledgements

Thanks to Dr. Tolleson-Rinehart and Dr. Zolotor for your tremendous assistance & support.

Table of Contents

Abstract..... i
Acknowledgements..... ii
Table of Contents..... iii
Introduction..... 1

Introduction

Opioid abuse and addiction are major public health problems in the United States. Now classified as an epidemic (CDC Injury Center, 2017), the current wave of addiction has been fueled largely by prescription drug use succeeded by a subsequent spike in heroin abuse. In 2015, drug overdose was the leading cause of accidental death in the US, with more than half of these deaths related to prescription pain and heroin overdoses - comprising around 32,000 deaths in 2015 (ASAM, 2016). It is estimated that 2.5 million adults and adolescents have a substance abuse disorder involving prescription pain relievers and/or heroin (ASAM, 2017). The cost of this epidemic has been estimated to be $55 billion annually (Birnbaum et al., 2011) and has been associated with increased rates of crime, HIV acquisition, and hepatitis C infection, among other negative outcomes (Schukit, 2016). The epidemic has steadily worsened throughout the past few decades: from 2000 to 2015, overdose deaths from opioids have increased 2.8 fold (National Institute on Drug Abuse, 2017). The epidemic has placed a tremendous burden on families and communities – for example, there has been a national surge in the number of children in the foster care system that is thought to be directly related to the opioid epidemic (Wiltz, 2016). Rural areas have been especially affected, with higher rates of overdose as compared to urban areas (Keyes et al, 2014). These facts and statistics demonstrate the need for broad access to effective solutions and treatment modalities.

This paper will investigate medication-assisted treatment (MAT) for opioid abuse, focusing on buprenorphine, one agent in the category of MAT agents. MAT is a general strategy of treatment that combines pharmacotherapy with mental health and social support to help treat opioid addiction. Buprenorphine is part of a treatment paradigm originally intended to create broad access to substance abuse treatment by allowing office-based treatment by any physician, provided they complete training and obtain a federal waiver. However, despite the

aim of widespread adoption, provider uptake of buprenorphine has been low. Thus, the main research question of this paper is how to expand provider use of buprenorphine. I investigate this question by synthesizing a limited systematic review of the literature providing evidence of barriers to providers with a review of current policies related to MAT. I conclude with evidence based recommendations for future policy solutions.

Medication Assisted Treatment for Opioid Abuse

As stated above, MAT is one method of treatment of opioid abuse. The general purpose of MAT is to provide pharmacotherapy to opioid dependent patients to reduce cravings and withdrawal symptoms, while minimizing euphoric effects. Ideally, this allows the patient to avoid drug abuse, avoid negative behaviors and activities associated with addiction, remain in treatment, and maintain productive lives. Many patients can be weaned off of MAT in time; while others take it indefinitely (SAMHSA, 2015). It is not usually meant to be used as a singular, exclusive treatment modality, but rather one component of comprehensive, multi-pronged treatment that often includes some form of mental health therapy as well (SAMHSA, 2015). The benefits of MAT therapy are proven (Schuckit, 2016; Volkow, 2014), and include lower overdose rates, higher rates of retention in treatment, improved social functioning, reduced transmission rates of infectious diseases such as HIV and hepatitis C, and reduced rates of engagement in criminal activity (Volkow, 2014).

Historically, methadone was the primary method of MAT. Methadone is a full opioid agonist (e.g., a drug that fully engages the opioid receptors in the brain) that is usually administered orally and taken once a day. However, by law, methadone administration is limited to heavily regulated treatment centers, which restricts its accessibility to patients and thus its use. Buprenorphine (brand names Subutex, or Suboxone when the buprenorphine is combined with naloxone) is a partial opioid agonist (e.g.. it binds and activates opioid receptors but less

completely than is true of full agonists), approved by the Food and Drug Administration (FDA) in 2003 for office-based treatment for opiate use disorders (Li et al., 2014). Since it can be prescribed in an average ambulatory setting, via the Drug Addiction Treatment Act of 2000, it is not limited to certain treatment centers, as is methadone. The putative ease of prescribing buprenorphine theoretically widely expands access to treatment. Buprenorphine is thought to have a better safety profile than does methadone, including lesser risk of overdose, as well as lower risk of abuse (Li et al, 2014). Buprenorphine has been demonstrated to be effective in maintenance treatment of opioid dependence and suppression of illicit opioid use, and is comparable in effectiveness at fixed medium and high doses to methadone (Mattick et al, 2014). Effectiveness in studies of buprenorphine in retaining patients in treatment has been demonstrated to be in the 40% range – similar to that of methadone (Fiellin et al, 2008; Fiellin et al, 2006; Parran et al, 2012). Unlike methadone use, which usually mandates daily observed intake at these treatment centers and reserving take-home medications only for patients that have demonstrated compliance over time, buprenorphine can be taken at home. Buprenorphine prescriptions also come without the perceived stigma amongst potential patients of methadone clinics - thought to result from the common location of these clinics in low-income urban areas (Gryczynski et al, 2014). Patients also might prefer a choice of buprenorphine over methadone because it makes it easier to maintain a job or perform other commitments, since one does not have to attend a clinic every day for administration (Gryczynski et al, 2014). The outpatient-based nature of treatment makes it an appealing option to help counter the growing opioid crisis - there continues to be a substantial gap between those who seek treatment for opioid dependence, and those who are actually able to access treatment (SAMHSA, 2015). Speaking more broadly about substance abuse, it has been estimated that only 10.9% of those that need treatment actually receive it (SAMSHA, 2014).

Providers are able to prescribe buprenorphine for MAT by applying for a waiver through the Drug Enforcement Agency (DEA), after completing 8 hours of required training (SAMHSA, 2017). This waiver allows physicians to treat up to 30 patients in their first year, after which they can expand their panel of buprenorphine patients to a maximum of 100, with a recently expanded maximum cap of 275 patients after a certain period of time (SAMHSA, 2016). Physician Assistants (PAs) and Nurse Practitioners (NPs) were also given the ability to prescribe buprenorphine for opioid dependency treatment by the Comprehensive Addiction and Recovery Act of 2016, although their ability to prescribe varies from state to state (discussed in greater detail later in this paper). Currently, around 25,000 physicians nationwide are certified to prescribe buprenorphine under the waiver process (SAMHSA, 2016). However, it is estimated that 40% of waivered physicians don't prescribe the drug at all (Moran, 2016; SAMHSA, 2016). The number of providers signed up to prescribe buprenorphine has increased steadily over the years (Arfken et al, 2010), but despite this increase, the number of providers authorized to prescribe buprenorphine has not caught up with the demand created by the continued opioid crisis. In fact, it has been estimated that only 3% of primary care physicians and 16% of all psychiatrists have signed up to receive a waiver (Rosenblatt et al, 2015). Additionally, most of these physicians are located in urban areas, and not in the rural areas where the opioid epidemic has been particularly damaging (Rosenblatt et al, 2015). A report found that despite growth in the number of physicians providing buprenorphine, 47% of US counties still had a shortage of waivered physicians in 2011 , found in concert with a stable number of methadone OTPs nationwide (Dick et al, 2016). In 2012, a study demonstrated that, in a best-case scenario in which all waivered physicians were prescribing at their maximum patient limit there was still a treatment gap of nearly 1 million people between those that abuse opioids and the treatment capacity of buprenorphine providers. This same study found that the majority of states had a treatment gap of at least 3 patients per 1000 people (Jones et al, 2015). These findings demonstrate a continued shortage of buprenorphine waivered physicians and a persistent

treatment gap. And as only 3% of primary care physicians are signed up to prescribe buprenorphine, there is considerable potential for community physicians to help fill this treatment gap. Outpatient-based physicians, especially primary care physicians, might also be uniquely equipped to become waivered and help combat the epidemic considering that primary care physicians can help provide needed longitudinal care and treatment of medical conditions associated with opioid addiction, and serve as a gatekeeper to other needed services such as mental health therapy and specialty services.

Thus, despite the initial promise and potential for widespread availability, provider adoption of buprenorphine for MAT has been disappointing. Identifying barriers from the provider perspective is crucial to developing potential solutions and informing policy development, such that access to buprenorphine can increase as needed to combat the opioid epidemic. This author is not aware of any current systematic review that has examined the reasons behind the slow uptake of buprenorphine for MAT. Previous systematic reviews have addressed outpatient therapy acceptance largely revolving around methadone (Becker and Fiellin, 2005), but I identified none specifically focused on buprenorphine therapy, and the Becker and Fiellin review examined articles largely completed before the advent of buprenorphine for MAT, reflecting its status as a relatively newer medication for this indication. There is a need for a review that examines more current attitudes and barriers, revolving specifically around buprenorphine for MAT, and particularly focusing on providers' willingness to prescribe the treatment. This paper uses a limited systematic review of existing literature to identify the reasons behind provider lack of uptake of waiver acquisition and buprenorphine prescribing. I also identify facilitators of buprenorphine administration. I use findings from this review will to discuss existing policy governing buprenorphine and MAT at large, and to inform steps toward an ideal policy to help promote the use of buprenorphine for treatment of opioid abuse.

Methods

The purpose of the review is to determine and describe, from the literature, barriers to physician adoption of buprenorphine for MAT for opioid abuse, followed by an inquiry into relevant policy and a discussion of policy steps moving forward. A systematic review of the literature concerning provider attitudes, beliefs and barriers to prescribing buprenorphine comprises part one of this paper. As this literature is mostly drawn from interview-based studies and small-sample, questionnaire-based studies, I appraise the literature by departing from the strategy more traditionally associated with clinical trials. Many appraisal techniques used to evaluate clinical trials such as cohort studies and randomized controlled trials are difficult to apply to studies using other research designs. I thus chose to use the Critical Appraisal Skills Programme (CAPS) framework for qualitative studies to evaluate the literature I have identified. This is a 10-point checklist framework that has been used in published studies to evaluate qualitative studies. I evaluated survey-based studies using an adapted framework from the aforementioned CAPS checklist, the NIH quality assessment tool for cross-sectional and cohort studies, as well as a framework from Saab et al. (2016) developed to help assess survey studies After applying these frameworks, I aggregate and discuss common themes observed in the reviewed articles.

This review includes published studies that address provider attitudes, beliefs and barriers to prescribing buprenorphine for opioid abuse. This review includes both quantitative and qualitative studies. I performed a search of 4 major databases (MEDLINE, Psychinfo, Cochrane and CINAHL) using the search terms {*((opioid) AND buprenorphine) AND (Attitude of Health Personnel OR*

(physicians AND (attitudes or beliefs))) }, as derived after working with UNC librarian services, with the last search occurring on 5/11/2017.

These are the elligibility criteria for reviewed articles:

- Conducted in the United States, and written in English;
- Since DATA approval in 2000;
- Primarily addressing the use buprenorphine for office-based treatment of opioid abuse (e.g. not primarily addressing diversion of buprenorphine, factors making patients more likely to receive buprenorphine, or other associated topics. Articles discussing both buprenorphine and methadone were included, as part of a discussion on overall office based treatment, as long as buprenorphine was discussed in a significant manner). Office based treatment could be from the perspective of primary care providers, psychiatrists, addiction medicine specialists, or other fields which might prescribe buprenorphine in an office setting.
- Articles primarily concerning attitudes and barriers for providers.

I reviewed titles and abstracts, and excluded those that failed to meet the inclusion criteria listed above. For this portion of the study, I also excluded articles if they primarily discussed system-level barriers, or primarily had institutions, rather than individual prescribers, as the unit of study. I was the only reviewer of the remaining articles. After reviewing the literature, I organized findings into common themes (see the "Results" section below).

Results of the limited systematic review

Including duplicates, I identified a total of 201 articles using the search strategy, and screened 64 articles after removal of duplicates. From this list, I assessed a total of 19 articles for eligibility, and identified a total of 9 articles for review (See figure 1 in the Appendix for a

schematic of the search results). The articles were a mix of qualitative and quantitative studies, relying on results from both interviews and questionnaires. Articles were also varied in the sectors and provider field/specialty that they analyzed: some focused exclusively on primary care providers and family medicine doctors, while others examined addiction medicine specialists and general psychiatrists. The studies included in this review can be seen in table [number]. The literature contains common themes, which I will describe below.

Barriers

Stigma

Seven of the nine reviewed studies identified discomfort and unease with the patient population as barriers to buprenorphine use. These barriers were described in many ways. One form of stigma was demonstrated by the opinions providers had toward opioid-dependent patients. These patients were generally perceived as a difficult or undesirable population to work with. As an example, a study by Gordon, Kavanagh, Krumm et al (2011) examining perspectives about buprenorphine prescribing within the Veterans Health Administration found that "it was clear that many physicians ."…do not want these 'types' of patients'" on their patient panel or in their clinics, (p.218) which represented a common barrier to buprenorphine MAT amongst respondents. McMurphy et al., in a study examining attitudes amongst primary care clinic directors in New York, found that stigma about opioid-dependent patients was the most commonly cited barrier to treatment in their panel, with one director stating that "it's one of the toughest populations for me to deal with in all the areas that I work…most of them haven't changed the behaviors of their addiction, and so you're constantly chasing them and trying to monitor urine drug screens." (p.546). Clinic directors also used the terms "difficult, manipulative, arguing, ...undesirable…,too many social problems" (p.546) to describe their views on patients receiving MAT(p546) (McMurphy, Shea, Switzer et al, 2006). DeFlavio, Rolin, Nordstrom et al. identified difficulty treating patients with addiction as a crucial barrier as well, stating that

patients with drug addiction “were referred to as ‘high-maintenance,’ ‘stressful,’ and ‘challenging,’” (p.6) and cited mistrust and negative attitudes towards addicted patients as a significant barrier to buprenorphine use. In that same report, the authors found that many respondents held the belief that “family physicians would prefer it if patients went elsewhere for addiction services.” (p6). Molfenter, Sherbeck, Zehner et al in a study of providers and payors in Ohio noted that physicians did not want to initiate buprenorphine prescribing due to fears of working with addiction patients, with a board member stating “Doctors do not want to deal with this population.” (p.5).

A related barrier was the fear of mixing patient populations, e,g,, patients with opioid abuse sharing clinic space with “regular” patients; and the fears that this patient mixing would have on the perception of their clinic. McMurphy et al identified this as a significant barrier, reporting that many respondents were concerned about exposing patients such as “pregnant women and children” and a “senior population” to “disturbing patients,” and others reporting fear that their clinic would be “stigmatized” amongst the community at large where the clinic is located (p.546-7). Suzuki, Connery, Ellison et al., in a study featuring an online survey of 93 psychiatrists comparing attitudes between those that had completed buprenorphine certification and those that had not, found that “not [wanting] to attract patients with opioid addiction to my office” (p.621) was among the most frequently reported barriers in both those that had and had not received training, and was significantly higher among those that did not receive training in residency. In another study analyzing beliefs of psychiatrists and addiction specialists, Thomas, Reif, Haq et al found that “[offering buprenorphine] would change the patient mix undesirably” (p.913) was amongst the top three most important barriers for respondents. It is clear that a reluctance to work with the opioid-dependent population emerges from the stigmatization of this population, and stigma is a key barrier to adoption of buprenorphine.

Lack of support & resources

Another prominent theme in the literature was the lack of resources or associated services to provide buprenorphine to patients – 7 of the 9 reviewed studies mentioned this barrier. The complaint of lack of services included the need for psychological therapy and other behavioral health services for patients who abuse opioids. An associated complaint was the lack of time to treat these patients and address any needs beyond buprenorphine administration.

McMurphy, Shea, Switzer et al found that many clinic directors identified need for broader services, increased volume of patient visits, and challenges for staff, as major barriers to prescribing buprenorphine in their clinics. Additionally, 44% of respondents felt that "these patients' psychological needs could not be managed in the clinic," which reinforced the need for increased services to implement outpatient opioid treatment. Hutchinson, Caitlin, Andrilla et al. found that lack of mental health care and psychosocial support was the most frequently reported barrier to prescribing buprenorphine in their respondent panel of Washington state physicians - a variable that was likely exacerbated by a state rule that Medicaid pays for buprenorphine only if patients receive concurrent counseling services. DeFlavio et al. found that many family physicians stated that they would need easier access to pain management and psychiatric services before considering buprenorphine adoption. Time constraints and lack of specialty backup were the number two and three most frequently reported barriers in their study, factors associated with lack of resources. Lack of resources was also a commonly mentioned barrier in the Gordon, Kavanagh, Krumm et al study of VHA implementation, as well as in an article by Cunningham, Sohler, McCoy et al. examining provider beliefs in an urban treatment setting – there, providers said they would like available consultation/case-conferences, as well as on-site counselors/social workers.

Lack of training

Need for training and physician unawareness of buprenorphine as a potential treatment modality was another prominent theme in the literature, identified in 6 of the reviewed studies. Unawareness of buprenorphine was observed – for example, McMurphy et al. found that less than half of their respondents knew about buprenorphine, in contrast to all of them knowing about methadone for MAT. Other studies noted lack of training or experience with buprenorphine, despite being aware of it as a potential modality, as a significant barrier. Cunningham et al. noted that the most frequently stated reason for not prescribing buprenorphine among their panel of attending physicians and residents in an urban teaching hospital was the lack of knowledge of training. Lack of training among non-physician staff was also recognized as a barrier.). DeFlavio, Rolin, Nordstrom et al. found that 88% of their non-prescribing respondents said inadequately trained staff was a significant barrier. Suzuki, Connery, Ellison et al., found that psychiatrists that had completed any training about buprenorphine during residency were significantly more likely to have favorable views of buprenorphine, as well as reporting significantly fewer barriers to prescribing buprenorphine, than was true of residents who had no training during residency. Molfenter, Sherbeck, Zehner et al. also noted that physicians not being knowledgeable about buprenorphine was a significant barrier to acceptance of the medication.

Other barriers

Costs. Costs to patients and providers was a theme in many articles. Many articles noted that there is no financial incentive to add buprenorphine to one's practice, given the higher costs of needed ancillary services and possibly longer consultation times. Other articles cited the high costs of buprenorphine to the patient as a barrier to treatment.

Regulations. This barrier was more common in articles that analyzed the attitudes pf psychiatrists and addiction specialists, subspecialties with higher rates of waivered providers than is true of primary care physicians. Specifically, the patient caps imposed by DATA were

identified as a barrier to treatment, with waivered physicians who prescribed buprenorphine quickly reaching their caps and becoming unavailable to meet the demand of potentially interested patients. Fear of DEA audits was also mentioned as a challenge by providers who prescribe buprenorphine in a study by Kissin et al.

Not a primary care problem. The view that treatment of opioid abuse falls outside the purview of primary care was a theme in this literature. A related finding was the belief that treatment of opioid abuse should be limited to psychiatry/ addiction medicine only.

Disagreement with use of buprenorphine for treatment of opioid addiction/abuse. Negative attitudes toward the general philosophy behind MAT appeared in the literature as another barrier to buprenorphine use. Providers holding these attitudes often instead favored abstinence-based therapies. Molfenter et al noted that staff orientation towards abstinence based therapy was a prominent source of resistance to uptake of buprenorphine and general medication therapy, exemplified by the quote that "...medication-assisted treatment is substituting one drug for another." (p.5) The resistance of other groups involved in drug abuse treatment, such as Narcotics Anonymous, was also noted as a barrier to treatment.

Fears of diversion. Concerns about patient diversion of buprenorphine was also noted in some studies as a barrier to treatment. Articles noted concerns about the "street value" of buprenorphine, as well as fears that significant amounts of buprenorphine would end up in the community. Tying back to the theme of stigma, it was feared that the provider's clinic would be known as the source of buprenorphine in the community.

Facilitators

I selected the articles I have identified here because they discussed barriers to buprenorphine treatment. Many, however, also discussed facilitators to buprenorphine for MAT. These facilitators give useful insight into the context surrounding provider adoption of buprenorphine.

Funding

Increased funding for buprenorphine, or financial incentives to prescribe buprenorphine, was mentioned as a facilitator in this review. Respondents in McMurphy et al noted that an enhanced Medicaid clinic rate would help incentivize providers to prescribe buprenorphine, as well as assist in funding associated services such as social work. Special remuneration for buprenorphine was also a highly discussed facilitator in the study by DeFlavio et al of family physicians. County funding for buprenorphine was also noted as a facilitator by Molfenter et al. Overall, increased funding or reimbursement towards buprenorphine-related services is clearly a prominent facilitator of buprenorphine adoption.

Training

Specific training in the use of buprenorphine was also a prominent facilitator in the reviewed articles. Gordon et al noted that established training and education was a key facilitator in getting buprenorphine into their VA facilities. McMurphy et al also emphasized training opportunities specific to the management of addicted patients. A respondent quote from the article illustrates the point: "I think the training that took place for this would have to be by people who have done it and would have to be down and dirty basic stuff on how to do this, not sort of textbook academic type stuff, but real day to day…" (p.548) Other suggestions included continuing medical education (CME) credits, and free/reimbursed training for buprenorphine use.

Support

The literature also suggested that the presence of advice from providers with experience, as well as support services would increase the likelihood of buprenorphine use. On-call addiction specialist & expert support was a possible facilitator mentioned in two articles, an especially relevant variable for interested primary care physicians. Access to greater social services and mental health professionals for more comprehensive care of opioid dependent patients was

another facilitator. Finally, shared information was identified as a facilitator, in the form of information about model clinics (e.g.. clinics that had successfully implemented buprenorphine into their practices), as well as patient success stories. Another form of support noted by respondents in Hutchinson et al. was the use of follow up courses and site visits after initial trainings to help assist with implementation of buprenorphine. Larger scale organizational support of buprenorphine use was also noted as a potential facilitator.

Other facilitators

Demonstrated patient need. Gordon et al found that patient need and desire for buprenorphine, via pressing opioid addiction rates and stated desire for buprenorphine MAT, was a facilitator towards buprenorphine adoption. Patient requests and availability of buprenorphine locally were identified as facilitators by Suzuki et al.

Champion" staff member. Gordon et al noted that the presence of a buprenorphine "champion," or a staff member that was passionate and was an advocate for the use of buprenorphine, was a facilitator towards adoption, by providing motivation to overcome barriers and change the local clinic culture.

Time**:** this facilitator is interwoven with support and financial incentives, but two articles noted that more time allocated for opioid dependent patients would help facilitate use of buprenorphine.

Residency training was noted to be a facilitator by Suzuki et al, in that psychiatrists that had completed any amount of buprenorphine training during residency were found to have a lower likelihood of reporting barriers to prescribing buprenorphine as compared to those that had not completed any training.

Policy Analysis

Beyond understanding the barriers and facilitators affecting provider buprenorphine adoption, identifying the relevant policies promoting or inhibiting these barriers & facilitators is a useful task, in order to help inform the relationship between policy and practice. Generally, buprenorphine use is tied to general policy decisions and moves regarding substance abuse treatment as a whole. Substance abuse treatment has become an increasing focus of policy decisions as the epidemic continues across the country. This section will examine these policy decisions, detail their effects on the barriers to treatment described earlier in this paper, and explore what policy movement might ideally address provider barriers to buprenorphine adoption.

Current Policy

Two intertwined policy fixtures that have large roles in the realm of substance abuse treatment are Medicaid and the Affordable Care Act (ACA). Medicaid is the largest single funding source of substance abuse treatment nationwide (Burns et al, 2016), covering (along with CHIP) 3 out of 10 individuals with opioid addiction (Kaiser Family Foundation, 2017). Medicaid has historically been a significant funding source of substance abuse treatment, but its role has increased substantially after the passage of the ACA, largely as a result of the ACA's Medicaid expansion. Specific to MAT, in 2013 only 5 states had Medicaid policies that excluded coverage for methadone and buprenorphine (Burns et al, 2016); and by 2016, all states covered MAT, as mandated by the ACA (Vestal, 2016), and all state Medicaid agencies carried buprenorphine on their formulary. Medicaid funding of buprenorphine treatment is a very important variable in the explanation of physician adoption: a report found that public sector reimbursement of office-based buprenorphine treatment is associated with more waivered physicians in a given state (Stein et al, 2015).

The ACA has been an important pillar for substance abuse treatment for reasons beyond Medicaid expansion. The ACA has affected substance abuse treatment through four main areas: insurance coverage expansion; insurance reforms mandating inclusion of substance abuse treatment; mandating parity of treatment funding; and treatment and delivery reforms (Abraham et al, 2016). One mandate of the legislation states that substance abuse treatment be included as an essential health benefit in private health plans and in Medicaid (Clemans-Cope, 2017). In private health plans, such as those in the marketplaces, there must be coverage of at least one drug from the category of buprenorphine, buprenorphine/naloxone(suboxone), and naltrexone (Clemans-Cope et al., 2017). Additionally, The ACA has resulted in the expansion of Medicaid to all individuals up to 138% FPL in 31 states and the District of Columbia, which has conferred substance abuse treatment to millions of previously ineligible individuals. The ACA also mandates that all plans in the private health insurance marketplace can't have provisions for substance abuse services that have limits less favorable than those imposed on medical and surgical benefits, clarifying prior legislation from the Mental Health Parity and Addiction Equity Act. Other effects of the ACA include funding for delivery reform and promotion of coordinated care initiatives (Clemans-Cope et al, 2017). This expansion has been beneficial for many states confronting the epidemic - for example, Kentucky, a state with high rates of opioid addiction, experienced an increase in the number of waivered physicians following Medicaid expansion, and 13,000 Kentucky residents were able to receive substance abuse treatment in 2014 (Wright and Vanderford). Another example is found in New Hampshire, where the state was able to connect 10,000 people to substance abuse treatment in 2015 after Medicaid expansion (Rodriguez, 2016).

Aside from Medicaid expansion, some states have taken on larger roles in confronting the opioid epidemic. Vermont, a state that has been affected by the epidemic, has taken considerable steps to reorganize the health system and expand access to treatment. For

example, the state has set up regional hubs of opioid assessment and treatments, as well as put into place efforts to shift treatment from residential-based treatment towards primary care doctors, counselors and therapists in order to increase access to treatment (Kardish, 2015)

Increased funding via the ACA and Medicaid has led to greater access to treatment, and helps to reduce barriers related to financing. This has occurred by helping to lower costs to the patient, as well as providing incentive for providers to adopt buprenorphine, such that providers would not be offering potentially uncompensated care to patients. However, some challenges to Medicaid coverage of substance abuse treatment and buprenorphine use remain. Generally, there is considerable variation in state Medicaid policies regarding reimbursement and limits to coverage of MAT (Rinaldo & Rinaldo, 2013). Buprenorphine is carried on the formulary of every state Medicaid agency, but it is frequently subject to “specific and complex” limitations in many states (Rinaldo & Rinaldo, 2013). A 2016 report found that all Medicaid programs save one had limits imposed on buprenorphine use - examples of these limits included prior authorization, documentation of counseling with a buprenorphine prescription, lifetime limits, and maximum daily limits (Grogan et al, 2016) . Another example is the requirement of “step therapy,” which mandates documentation of trying another therapy first before “resorting” to buprenorphine (Clemans-Cope et al, 2016).

These limitations are driven by many factors, including concerns over costs and fear of diversion, despite evidence demonstrating that restricting access to buprenorphine does not lower expenditures for Medicaid or reduce mortality (Clark et al, 2011). Another example of limitations fueled by fears over diversion can be found in Tennessee, where the “Addiction and Treatment Act of 2015” was passed in response to high prescribing rates and concerns about buprenorphine abuse, and put into place daily limits before one must be referred to an addiction specialist, as well as restrictions on the prescribing of buprenorphine mono-product (subutex)

(McGivern, 2015). Finally, largely for political reasons (Goodnough, 2015), many states chose not to expand Medicaid to 138% FPL. Lack of expansion excludes individuals in those states from addiction coverage, as well as excluding providers in those states from receiving a funding source for potentially treating patients with opioid abuse disorder. One way of quantifying the result of this variation in state Medicaid policy is examining overall Medicaid funding of total buprenorphine prescriptions in a state. Vestal(2016) . found considerable state by state variation, with Vermont having more than 60% of prescriptions paid by Medicaid, and Mississippi having less than 10% on the low end (Vestal, 2016). This variation is partially explained by Vermont being an expansion state, while Mississippi did not expand Medicaid.

Another piece of relevant legislation is the aforementioned Comprehensive Addiction and Recovery Act, or CARA, signed in 2016. Its provisions included increased funding of grants to expand the availability of MAT, expansion of prescribing privileges to NPs and PAs under the SAMHSA waiver program, as well as implementation of guidelines regarding ongoing review of the patient limit. Also around this time, the U.S. Department of Health and Human Services (HHS) increased the maximum patient limit for buprenorphine prescribing providers from 100 to 275. Expanding prescribing benefits to midlevel providers such as PAs and NPs has some potential benefits. In many areas, particularly rural areas that often have a high burden of opioid addiction, medical services are more likely to be provided by mid-level provides, especially NPs (Van Vleet and Paradise, 2015). As there are over 300,000 NPs and PAs nationwide (Vestal, 2017), expanding prescribing privileges to these providers could help increase access to buprenorphine in areas that urgently need the help.. Even if only a fraction of these providers obtained the SAMHSA waiver and actually prescribed buprenorphine at rates similar to those of MD and DO prescribers, that would represent an improvement over the status quo. Despite this federal legislation, however, NPs and PAs are not actually able to prescribe buprenorphine in many states largely due to scope of practice disputes (Van Vleet and Paradise, 2015).

Specifically, many states have laws preventing NPs or PAs from prescribing buprenorphine unless they are working with a waivered physician, while some state laws include outright prohibitions on NP and PA prescribing, despite oversight (Vestal, 2017). Additionally, some of the larger provisions of CARA with regard to treatment have not actually been funded(Frank, 2016).

Moving Forward

Looking into the future of substance abuse treatment and MAT, it is clear much will be dependent on the current contentious topic of health reform. At the time of this writing, the ACA and Medicaid expansion remain sources of considerable political disagreement. If Medicaid and/or the ACA were to be repealed, that would represent a dramatic reduction in access to substance abuse treatment nationwide, unless potential replacement solutions have similar or expanded provisions for substance abuse treatment. While that debate continues, some financial and reimbursement considerations could help increase uptake of buprenorphine among providers. For example, if Medicaid remains the primary funder of substance abuse treatment moving forward, increased reimbursement rates for substance abuse treatment and MAT, as well as removal of restrictions and limitations like pre-authorization, could help create a better regulatory and financial environment to facilitate adoption. Another possibility is the use of vouchers, such that MAT remains affordable for patients despite insurance status.

It is also evident that there must be policy solutions and strategy separate from insurance & reimbursement regulations in order to increase access and uptake of buprenorphine. There is evidence supporting non-reimbursement based strategies that could be useful for increasing buprenorphine uptake. For example, Stein et al identified non-reimbursement strategies that were associated with more buprenorphine waivered physicians per capita, which included specific state guidance on use of buprenorphine, and the use of clinical guidelines for

buprenorphine use. Actions that might facilitate easier delivery of buprenorphine might also be useful for increasing provider uptake of buprenorphine. Other health systems across the globe have developed innovative solutions tothe problems of delivery of substance abuse treatment. For example, Canada has used telemedicine to connect patients with prescribing physicians for MAT. Another example is the use of pharmacy disbursement and direct observation of buprenorphine in order to increase access (Williams & Bisaga, 2016). Funding for physician support services could also go a long way toward increasing buprenorphine adoption rates. Examples of this include funding of expert support (such as addiction specialists) available on call, which was a noted facilitator in this review. This would be particularly useful for primary care doctors such as family medicine and general internists who are interested in caring for the addiction population.

Changes in buprenorphine practice guidelines could also help increase provider uptake and increase access. One proposal is initiating buprenorphine as soon as possible when treating a patient with opioid addiction, even in absence of counseling services or other support structures (Vestal, 2016). Experts are in agreement that buprenorphine should ideally be accompanied by counseling and other support methods. However, as detailed in the literature, the lack of counseling and support services inhibits many providers from offering buprenorphine in accordance to state guidelines, and thus represents a barrier to uptake. Even in the absence of support services, there may be considerable benefit to patients taking buprenorphine: if more patients are able to access buprenorphine treatment as a result of removing requirements of immediate co-receipt of counseling services, the population-level benefits of more individuals on treatment might prove substantial, even if the benefit to the individual patient might be slightly less. To that end, a report demonstrated no difference in efficacy between extended counseling co-administered with buprenorphine as compared to limited nurse-administered counseling with buprenorphine in retaining patients in treatment and reducing frequency of illicit opioid use

(Fiellin et al, 2006), lending credence to the potential benefit of reducing the requirement of mandatory co-administration of counseling from a dedicated therapist.

Raising the maximum number of patients that a waivered physician can serve to help facilitate access. One consideration with that approach is that most waivered physicians don't prescribe buprenorphine at all, and many that prescribe don't approach their patient cap. A report found that that the number of waivered physicians at the 100 patient limit level was mostly associated with an increased amount of buprenorphine dispensed, in comparison to an overall increase of buprenorphine waivered physicians, and substance abuse treatment facilities using buprenorphine (Stein et al, 2015). Additionally, the study had findings suggesting that physicians waived to treat only 30 patients are likely to not treat patients with buprenorphine at all (Stein et al, 2015). This suggests that the physicians that are actively treating patients with buprenorphine are the ones pushing to increase their limit to the maximum allowed level. While the maximum patient cap has been expanded to 275 patients, this report suggests that a further relaxation in patient limit could help improve access to buprenorphine. However, the report also suggests that an important step will be to induce providers not just to became waivered, but to also become motivated to actually provide buprenorphine to patients.

Legislation along with other state reforms have had varying effects on the funding opportunities and reimbursement strategies for substance abuse treatment and buprenorphine use, but one crucial barrier has gone relatively unaddressed: that of stigma. Increasing funding & reimbursement opportunities, as well as other strategies to facilitate buprenorphine access, might prove useful to connecting more patients to treatment up to a certain point, but maximum benefit is still dependent on primary care providers and other physicians becoming willing to take on these patients and provide them with treatment. As this review makes clear, provider unwillingness to deal with people with addiction, as well as stigmatization of addiction itself, are

key variables leading to a lack of provider adoption of buprenorphine. For example, despite the reforms that states such as Vermont are taking to combat the opioid epidemic, there has still been resistance from primary care providers, and the shortage of primary care physicians willing to take on patients with drug addiction has reduced the benefit of the regulatory changes (Kardish, 2015). Therefore, there should ideally be policy and legislation that directly addresses this stigma, or provides powerful enough incentives to override the stigma and reluctance to care for this population.

One possible method of reducing stigma among providers is by intervening at the earlier stages of a clinician's career, e.g. during medical school and residency, via the use of training and exposure to people with addiction and substance abuse treatment. It is well documented that there is little training in substance abuse and addiction during medical school, let alone opioid-specific abuse and treatment modalities (Vestal, 2016). Lack of early exposure and training can lead to misunderstanding, ignorance, and negative attitudes about addiction treatment; siloing responsibility in the area of dedicated addiction treatment alone, rather than creating an environment of shared responsibility for the addiction population among all providers. Increased training programs and exposure early in a physician's career could prove essential to changing this dynamic. It could also help reduce the belief of many providers that abstinence-only treatment should be the sole method of substance abuse treatment, another barrier identified in this review. A report describing the dispositions of a panel of psychiatrists noted that completion of any training during residency was associated with a more favorable view of the use of buprenorphine (Suzuki et al, 2014). Kininis et al (2013) detailed an example of a buprenorphine training program (BupEd), oriented towards primary care residents, that was shown to be feasible and effective in exposing residents to buprenorphine and providing education about the medication. It serves as a model that could be replicated in other medical schools and residency programs. Of course, there is still a need to train and raise awareness amongst physicians that

have completed graduate medical training – this goal could be achieved via mandatory or highly encouraged (e.g. accompanied by financial benefits) continuing medical education (CME) which detail the use and benefits of buprenorphine and MAT in general.

Increased funding of addiction services, to be added on top of normal Medicaid & private insurance rates, could serve as a facilitator that counteracts the disincentive that providers' stigmatized views might create. Increased funding might also help with other identified barriers such as lack of time and lack of resources, as increased money brought in from seeing these patients in clinic could help fund some of these services. Increased funding to the provider/clinic could also incentivize providers to spend more time with these patients, as well as give clinics greater flexibility and ability to finance associated social services and staff training. Increasing reimbursement and making it financially advantageous could help reduce the barrier of stigma and increase provider uptake, although regulatory oversight would have to be effective as to discourage the buprenorphine equivalent of opioid "pill mills." Where could this funding come from? One potential source, previously mentioned in this article, is in the form of increased remuneration via Medicaid & private insurance for buprenorphine treatment and wraparound services related to addiction treatment. Another potential source could be grants via state and federal legislation – for example like the grants found in the aforementioned CARA. Section 301 of CARA calls for the authorization of $25 million yearly towards providing grants to substance abuse agencies, local governments, and non-profits located in areas with high rates and/or rapid increases in opioid abuse (ASAM, 2017). However, as previously mentioned, funds have not been appropriated to this act despite its passage into law, thus these grants remain unfunded (Frank, 2016). Realizing the importance of addiction treatment in general, and the potential of buprenorphine therapy specifically, should be a priority for government agencies and other funding entities.

Comparing the opioid epidemic to the the HIV/AIDS epidemic provides a measure of hope that attitudes might change moving forward, as well as providing a model to emulate in turning it from a marginalized, stigmatized disease into a condition that the medical community takes ownership of (Vestal et al, 2016; Williams & Bisaga, 2016; Williams et al, 2017). HIV/AIDS was initially viewed almost entirely as a disease of moral/character failure, and potential treatment & prevention solutions were marginalized. As the epidemic continued to worsen, the paradigm began to shift. Increased funding and attention to the development of evidence based treatments led to the development and wide scale adoption of highly active antiretroviral therapy (HAART). Funding sources such as the Ryan White HIV/AIDS program allowed for the financing of medical treatments as well as associated wrap-around care such as social workers and care managers. Clinicians also began to receive increased training about HIV/AIDS, which changed provider understanding and attitudes about the disease. While there are still considerable gaps in treatment and access, HIV/AIDS is now viewed largely as serious chronic disease rather than a fatal result of moral failure. The epidemic has been slowed considerably by the widespread adoption of accepted treatment methods, proliferation of funding sources, and changes in beliefs and attitudes within the provider community. This same potential exists to bend the curve of the opioid epidemic. Few clinicians today would advocate that a medically indicated patient stop taking HAART because it is morally "weak" to accept help from medication. Likewise, few clinicians today are concerned by the idea that HIV/AIDS patients might remain on HAART for the rest of their lives. Yet providers still hold these attitudes about the correlates in the opioid epidemic: fear of indefinite opioid maintenance therapy and belief in abstinence based therapy as morally superior choices to MAT are still prevalent attitudes amongst physicians. Attitudes toward buprenorphine and other methods of MAT need to shift, as attitudes to HIV/AIDS did. The possibility that a patient remains on maintenance therapy for the rest of his or her life should be seen as an acceptable outcome, not a bug in the system - similar to how diabetic patients remaining on insulin therapy for the rest of their lives is seen as acceptable by the

medical community. This increased training could also raise the number of buprenorphine "champions" in practice, which was identified as a facilitator to buprenorphine adoption in this review.

Of course, training & exposure need not be limited to medical school and residency. Possibilities such as free/paid training and mandatory CME about opioid abuse & treatment for certain specialties are all ideas that might help improve awareness and education, and reduce stigma. Other variables that appeared to mitigate stigma included awareness of "success stories" - patients that had experienced dramatic life improvements after starting buprenorphine - and connections with "model clinics" that had successfully implemented buprenorphine into their practices. Wide disbursement of information about model clinics and patient success stories could also prove useful in reducing provider stigma and increasing uptake.

All the measures described above will likely require investment of money, and/or its more efficient use, to initiate, which may prove challenging in the current political climate. However, a compelling case could be made for the necessity of increased funding. Compared to the total costs of the continued epidemic, which are estimated to be on the scale of billions, measures to improve buprenorphine uptake and access would produce expenditures in the short term but would likely have long-term financial savings. The savings would come from reduced criminal justice and health care costs, as well as restored productivity that may have been otherwise lost due to hospitalization, incarceration, addiction, and premature death. As this epidemic worsens, addressing it through multiple methods, including treatment, will be an increasingly important goal of policymakers and stakeholders. Moves that would increase training opportunities, implement easily accessible support services, and increase remuneration for buprenorphine related services would go a long way towards addressing barriers to buprenorphine adoption.

Summary, Limitations & Conclusion

This paper sought to examine buprenorphine use for opioid abuse treatment by conducting a limited systematic review of the literature and an inquiry into relevant policy. The limited systematic review included 9 articles, 3 of which were interview-based and 6 of which were survey/questionnaire based. Prominent barriers depicted in the literature are stigma, lack of support services, lack of time, and lack of training. Other identified themes included fears about diversion, disagreement with the philosophy of MAT, disagreement over primary care responsibility for opioid abuse treatment, regulations, and cost to the patient and clinic in providing buprenorphine. Facilitators to buprenorphine use among providers were increased funding, support, and time.

Two of the major themes identified in an earlier review mostly limited to methadone treatment were that providers believed that opioid dependent patients were more complex than other patients in their practice, and that many physicians felt the need for additional support services. Other barriers identified in their review were fear of disruption of the practice, uncertainty of competence to provide care, as well as disagreement with treatment philosophy. Many of these identified themes were present in this review as well, suggesting that buprenorphine may suffer from the same challenges that affected methadone use, and that these issues have not faded with time.

The ACA and Medicaid have both produced advances in coverage and access, but these advances are threatened by health reform debates at the time of this writing. Coverage aside, more widespread adoption of buprenorphine for treatment of patients with opioid addiction will require a change in the culture and beliefs of the provider community at large. This culture change would hopefully promote the belief that opioid addiction is a medical issue, help dispel stigmatizing beliefs and attitudes, and spur more providers to play a role in substance abuse

treatment. Future policy solutions should keep this culture change as a goal, while providing for support services to help assist providers that have already chosen to treat patients with buprenorphine.

Data Limitations

The evidence undergirding this assessment of buprenorphine use includes data limitations. Research designs relying on interviews can be subject to poor external generalizability, due to low sample size as well as limited interview penetration & confinement to a particular geographic area or health system type. There may also be differences between those who choose to take part in the interview process and those who do not. Studies such as these are generally useful for shedding light on themes and concepts but not good at discerning firm conclusions. While themes were consistent throughout reviewed articles, implying that there may be some generalizability; it is hard to know conclusively if the barriers and themes identified in this review represent those held by all potential prescribers of buprenorphine across the nation. Larger national samples of provider respondents would help assess the robustness of the conclusions in this review.

Study limitations

This study has some limitations as well. This review was performed by one author, without multiple assessors, meaning that articles to be included or themes identified were not obtained via independent coding, consensus opinion, or determined after discussion, but rather subject to the determination of one person. Additionally, this review did not systematically attempt to identify unpublished literature. Finally, this paper reviewed articles that detailed the opinions of primary care doctors that prescribe buprenorphine as well as psychiatrists/addiction specialists, which may represent a conflation of findings. However, findings from the review suggest that providers from these different fields encountered some common barriers to buprenorphine MAT

use, indicating that combining studies involving different fields of medicine was a useful exercise.

Conclusion

This research suggests that many barriers to more widespread adoption of buprenorphine for MAT remain. Stigma, lack of education, and lack of support were prominent barriers identified by this study. Some facilitators of buprenorphine adoption were also discussed in the reviewed studies, and included increased remuneration, educational opportunities, presence of a "champion" of buprenorphine MAT, and greater access to support services. As the burden of opioid addiction and abuse continues to grow in our country, access to MAT will only become more and more important, and buprenorphine remains the most feasible tool in the arsenal to expand treatment on a wide scale. Steps that incentivize providers to overcome discomfort with opioid-dependent patient populations and provide increased levels of training and support services should be considered in order to help combat this ongoing epidemic.

Appendix:

Figure 1: Flow Diagram of Article Inclusion

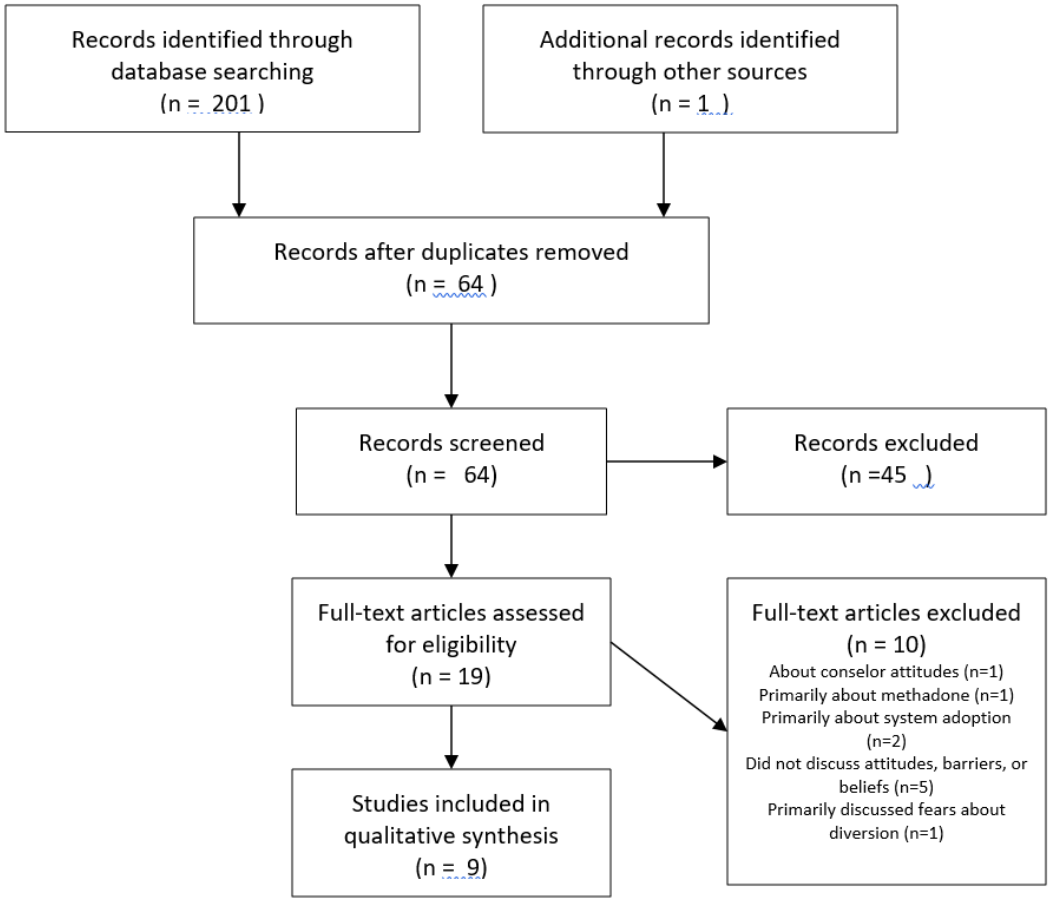

Table: Articles Included for Review

Author	Sample	Data Collection	Findings with regard to barriers
Cunningham et al, 2006	99 resident and attending physicians from universital hospital associated clinics in Bronx, NY	Adapted questionnaire	Most common barriers: 1. Lack of knowledge or training, 2. Lack of time, 3. Belief that opioid treatment is not a primary care issue, 4. Lack of available supportive structures or services.
DeFlavio et al, 2015	108 family physicians in Vermont and New Hampshire	Anonymous online survey	Most common barriers: 1. Inadequately trained staff, 2. Insufficient time, 3. Inadequate office space, 4. Regulations Themes from open ended questions: lack of knowledge, mistrust and difficulty with patient population, lack of time and interest
Gordon et al	61 interviews with key personnel at 17 Veterans Health Affairs facilities	Semi-structured interviews	Most common patient-based barriers: lack of perceived need Most common provider barriers: lack of education/training, resistance to change, stigma towards population, abstinence based philosophy
Hutchinson et al, 2014	92 physicians trained via Rural Opioid Addiction Management Project in Washington State	Questionnaire	Most frequently reported barrier: lack of mental health and psychosocial support, time constraints, lack of specialty backup, lack of confidence in ability to manage opioid addiction, resistance from practice partners, lack of institutional support Significant association between prescribing buprenorphine and having a partner who was waivered to prescribe buprenorphine

Kissin et al, 2006	545 nationwide addiction specialists that had completed waiver	Questionnaire	Challenges amongst waivered physicians: not viewing treatment as effective, not knowing effectiveness of drug. Challenges to prescribing: 30 patient limit, fear of DEA involvement, limited buprenorphine availability, lack of patient compliance. Open answered responses about barriers: stigma associated with treating patients, lack of familiarity, uncertainty about effectiveness.
McMurphy et al, 2006	27 NY state primary care clinic directors	Qualitative interviews	Less than half of respondents knew about buprenorphine, all aware of methadone Most common barriers: stigma about patient population, fears about mixing populations in clinic, fear of stigma at clinic, lack of training, finances
Molfenter et al, 2015	18 county boards and 36 addiction treatment providers	Interviews	Shared barriers between providers and payors Most common barriers: negative attitudes towards use of buprenorphine, physicians unwillingness to work with addiction population, payment environment, patient caps
Suzuki et al , 2014	93 nationwide psychiatrists that had completed buprenorphine training during residency	Online survey	Commonly identified barriers: lack of training, no supervision from mentors, do not want to attract patients with opioid addiction to office, lack of counseling, logistics, lack of institutional support

Thomas et al, 2008	495 total addiction specialists and non-addiction specialist psychiatrists	Survey	Prescribing at time of study limited to addiction specialists, not yet proliferated greatly to general psychiatrists Most common barriers among non-prescribers: does not fit with practices, does not have samples, would change patient mix undesirably

CASP Quality Assessment for Qualitative Studies

Number	Question
1. Was there a clear statement of the aims of the research? 2. Is the qualitative methodology appropriate? 3. Was the research design appropriate to address the aims of the research? 4. Was the recruitment strategy appropriate to the aims of the research? 5. Was the data collected in a way that addressed the research issue? 6. Has the relationship between researcher and participants been adequately considered? 7. Have ethical issues been taken into consideration? 8. Was the data analysis sufficiently rigorous? 9. Is there a clear statement of findings?	

Adapted Tool for Quality Assessment:
Combined from: https://www.nhlbi.nih.gov/health-pro/guidelines/in-develop/cardiovascular-risk-reduction/tools/cohort and http://journals.sagepub.com/doi/full/10.1177/1557988315626508 and CAPS

Questions
1. Was the research question or objective in this paper clearly stated? 2. Was the study population clearly specified and defined? 3. Was the recruitment strategy appropriate to the aims of the research? 4. Was the participation rate of eligible persons at least 50%? 5. Was the instrument used reliable? 6. Was the instrument used valid? 7. Has the relationship between researcher and participants been adequately considered? 8. Was it a primary data source? 9. Is there a clear statement of findings?

Quality Assessment of Articles
Qualitative study review (CAPS)

	Was there a clear statement of the aims of the research?	Is the qualitative methodology appropriate?	Was the research design appropriate to address the aims of the research?	Was the recruitment strategy appropriate to the aims of the research?	Was the data collected in a way that addressed the research issue?	Has the relationship between researcher and participants been adequately considered?	Have ethical issues been taken into consideration ?	Was the data analysis sufficiently rigorous?	Is there a clear statement of findings?
Gordon et al	Yes	Yes	Yes	Yes	Yes	Can't tell	Yes	Yes	Yes
McMurphy et al	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Molfenter et al	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Adapted questionnaire / descriptive study quality review

	Was the research question or objective in this paper clearly stated?	Was the study population clearly specified and defined?	Was the recruitment strategy appropriate to the aims of the research?	Was the participation rate of eligible persons at least 50%?	Was the instrument used reliable?	Was the instrument used valid?	Has the relationship between researcher and participants been adequately considered? ?	Was it a primary data source?	Is there a clear statement of findings?
Cunningham et al	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
DeFlavio et al	Yes	Yes	Yes	Unclear	No	Yes	Yes	Yes	Yes
Hutchinson et al	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Kissin et al	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Suzuki et al	Yes	Yes	Unclear	No	No	No	Yes	Yes	Yes
Thomas et al	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes

Bibliography

Abraham, A. J., Andrews, C. M., Grogan, C. M., D'Aunno, T., Humphreys, K. N., Pollack, H. A., & Friedmann, P. D. (2016). The Affordable Care Act Transformation of Substance Use Disorder Treatment. *American Journal of Public Health*, *107*(1), 31–32. https://doi.org/10.2105/AJPH.2016.303558

American Society of Addiction Medicine (ASAM) (2016). Opioid Addiction 2016 Facts & Figures. Accessed from https://www.asam.org/docs/default-source/advocacy/opioid-addiction-disease-facts-figures.pdf

American Society of Addiction Medicine (ASAM) (2017). Summary of the Comprehensive Addiction and Recovery Act. Accessed from https://www.asam.org/advocacy/issues/opioids/summary-of-the-comprehensive-addiction-and-recovery-act

Arfken, C. L., Johanson, C.-E., di Menza, S., & Schuster, C. R. (2010). Expanding treatment capacity for opioid dependence with office-based treatment with buprenorphine: National surveys of physicians. *Journal of Substance Abuse Treatment*, *39*(2), 96–104. https://doi.org/10.1016/j.jsat.2010.05.004

Becker, W. C., & Fiellin, D. A. (2005). Provider satisfaction with office-based treatment of opioid dependence: a systematic review. *Substance Abuse*, *26*(1), 15–22. https://doi.org/http://dx.doi.org.libproxy.lib.unc.edu/10.1300/J465v26n01_02

Birnbaum, H. G., White, A. G., Schiller, M., Waldman, T., Cleveland, J. M., & Roland, C. L. (2011). Societal Costs of Prescription Opioid Abuse, Dependence, and Misuse in the United States. *Pain Medicine*, *12*(4), 657–667. https://doi.org/10.1111/j.1526-4637.2011.01075.x

Burns, R. M., Pacula, R. L., Bauhoff, S., Gordon, A. J., Hendrikson, H., Leslie, D. L., & Stein, B. D. (2016). Policies related to opioid agonist therapy for opioid use

disorders: The evolution of state policies from 2004 to 2013. *Substance Abuse*, *37*(1), 63–69. https://doi.org/10.1080/08897077.2015.1080208

Buprenorphine/Naloxone Versus Methadone for the Treatment of Opioid Dependence: A Review of Comparative Clinical Effectiveness, Cost-Effectiveness and Guidelines. (2016). Ottawa (ON): Canadian Agency for Drugs and Technologies in Health. Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK385163/

Centers for Disease Control and Prevention. *Understanding the Epidemic | Drug Overdose* | CDC Injury Center . (2017). *CDC.gov*. Retrieved 11 July 2017, from https://www.cdc.gov/drugoverdose/epidemic/index.html

Center for Substance Abuse Treatment. (2005). *Medication-Assisted Treatment for Opioid Addiction in Opioid Treatment Programs*. Rockville (MD): Substance Abuse and Mental Health Services Administration (US). Retrieved from http://www.ncbi.nlm.nih.gov/books/NBK64164/

Clark, R. E., Samnaliev, M., Baxter, J. D., & Leung, G. Y. (2011). The Evidence Doesn't Justify Steps By State Medicaid Programs To Restrict Opioid Addiction Treatment With Buprenorphine. *Health Affairs*, *30*(8), 1425–1433. https://doi.org/10.1377/hlthaff.2010.0532

Clemans-Cope, L., Lynch, V., Epstein, M., & Kenney, G. M. (2017, May 24). Medicaid Coverage of Effective Treatment for Opioid Use Disorder. Retrieved June 27, 2017, from http://www.urban.org/research/publication/medicaid-coverage-effective-treatment-opioid-use-disorder

Clemans-Cope, L., Palanka, D., & Wishner, J. (2017). Repealing The ACA Could Worsen The Opioid Epidemic. Retrieved June 27, 2017, from http://healthaffairs.org/blog/2017/01/30/repealing-the-aca-could-worsen-the-opioid-epidemic/

Cunningham, C. O., Sohler, N. L., McCoy, K., & Kunins, H. V. (2006). Attending physicians' and residents' attitudes and beliefs about prescribing buprenorphine at an urban teaching hospital. *Family Medicine*, *38*(5), 336–340.

DeFlavio, J. R., Rolin, S. A., Nordstrom, B. R., & Kazal, L. A. J. (2015). Analysis of barriers to adoption of buprenorphine maintenance therapy by family physicians. *Rural and Remote Health*, *15*, 3019.

Dick, A. W., Pacula, R. L., Gordon, A. J., Sorbero, M., Burns, R. M., Leslie, D. L., & Stein, B. D. (2015). Increasing Potential Access to Opioid Agonist Treatment in U.S. Treatment Shortage Areas. Health Affairs (Project Hope), 34(6), 1028–1034. https://doi.org/10.1377/hlthaff.2014.1205

Goodnough, A. (2015). Complicated Politics of Medicaid Expansion Are Playing Out State by State - The New York Times. Retrieved July 2, 2017, from https://www.nytimes.com/2015/02/11/us/complicated-politics-of-medicaid-expansion-are-playing-out-state-by-state.html?mcubz=2

Gordon, A. J., Kavanagh, G., Krumm, M., Ramgopal, R., Paidisetty, S., Aghevli, M., … Liberto, J. (2011). Facilitators and barriers in implementing buprenorphine in the Veterans Health Administration. *Psychology of Addictive Behaviors : Journal of the Society of Psychologists in Addictive Behaviors*, *25*(2), 215–224. https://doi.org/10.1037/a0022776

Fiellin, D. A., Moore, B. A., Sullivan, L. E., Becker, W. C., Pantalon, M. V., Chawarski, M. C., … Schottenfeld, R. S. (2008). Long-Term Treatment with Buprenorphine/Naloxone in Primary Care: Results at 2–5 Years. American Journal on Addictions, 17(2), 116–120. https://doi.org/10.1080/10550490701860971

Fiellin, D. A., Pantalon, M. V., Chawarski, M. C., Moore, B. A., Sullivan, L. E., O'Connor, P. G., & Schottenfeld, R. S. (2006). Counseling plus Buprenorphine–Naloxone

Maintenance Therapy for Opioid Dependence. New England Journal of Medicine, 355(4), 365–374. https://doi.org/10.1056/NEJMoa055255

Frank, R. (2016). How Do We Finish The Job That The Comprehensive Addiction And Recovery Act Started? Retrieved June 27, 2017, from http://healthaffairs.org/blog/2016/09/12/how-do-we-finish-the-job-that-the-comprehensive-addiction-and-recovery-act-started/

Grogan, C. M., Andrews, C., Abraham, A., Humphreys, K., Pollack, H. A., Smith, B. T., & Friedmann, P. D. (2016). Survey Highlights Differences In Medicaid Coverage For Substance Use Treatment And Opioid Use Disorder Medications. *Health Affairs*, *35*(12), 2289–2296. https://doi.org/10.1377/hlthaff.2016.0623

The Henry J. Kaiser Family Foundation (2017). Medicaid's Role in Addressing the Opioid Epidemic. Retrieved 12 July 2017, from http://www.kff.org/infographic/medicaids-role-in-addressing-opioid-epidemic/

Hutchinson, E., Catlin, M., Andrilla, C. H. A., Baldwin, L.-M., & Rosenblatt, R. A. (2014). Barriers to primary care physicians prescribing buprenorphine. *Annals of Family Medicine*, *12*(2), 128–133. https://doi.org/10.1370/afm.1595

Jones, C. M., Campopiano, M., Baldwin, G., & McCance-Katz, E. (2015). National and State Treatment Need and Capacity for Opioid Agonist Medication-Assisted Treatment. American Journal of Public Health, 105(8), e55–e63. https://doi.org/10.2105/AJPH.2015.302664

Kardish, C. (2015). Is Vermont's Focus on Fighting Drug Addiction Working? Retrieved July 1, 2017, from http://www.governing.com/topics/health-human-services/gov-vermont-shumlin-drug-addiction-impact.html

Keyes, K. M., Cerdá, M., Brady, J. E., Havens, J. R., & Galea, S. (2014). Understanding the Rural–Urban Differences in Nonmedical Prescription Opioid Use and Abuse in the

United States. *American Journal of Public Health*, *104*(2), e52–e59. https://doi.org/10.2105/AJPH.2013.301709

Kissin, W., McLeod, C., Sonnefeld, J., & Stanton, A. (2006). Experiences of a national sample of qualified addiction specialists who have and have not prescribed buprenorphine for opioid dependence. *Journal of Addictive Diseases*, *25*(4), 91–103. https://doi.org/10.1300/J069v25n04_09

Knudsen, H. K. (2015). The Supply of Physicians Waivered to Prescribe Buprenorphine for Opioid Use Disorders in the United States: A State-Level Analysis. *Journal of Studies on Alcohol and Drugs*, *76*(4), 644–654.

Hillary V. Kunins MD, M., MPH, Nancy L. Sohler PhD, M., PharmD, A. G., Devin Thompson BA, B., & Chinazo O. Cunningham MD, M. (2013). A Buprenorphine Education and Training Program for Primary Care Residents: Implementation and Evaluation. *Substance Abuse*, *34*(3), 242–247. https://doi.org/10.1080/08897077.2012.752777

Li, X., Shorter, D., & Kosten, T. R. (2014). Buprenorphine in the treatment of opioid addiction: opportunities, challenges and strategies. *Expert Opinion on Pharmacotherapy*, *15*(15), 2263–2275. https://doi.org/10.1517/14656566.2014.955469

Mattick, R. P., Breen, C., Kimber, J., & Davoli, M. (2014). Buprenorphine maintenance versus placebo or methadone maintenance for opioid dependence. In *Cochrane Database of Systematic Reviews*. John Wiley & Sons, Ltd. Retrieved from http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD002207.pub4/abstract

McMurphy, S., Shea, J., Switzer, J., & Turner, B. J. (2006). Clinic-based treatment for opioid dependence: a qualitative inquiry. *American Journal of Health Behavior*, *30*(5), 544–554. https://doi.org/10.5555/ajhb.2006.30.5.544

Molfenter, T., Sherbeck, C., Zehner, M., Quanbeck, A., McCarty, D., Kim, J.-S., & Starr, S. (2015). Implementing buprenorphine in addiction treatment: payer and provider

perspectives in Ohio. *Substance Abuse Treatment, Prevention, and Policy*, *10*, 13. https://doi.org/10.1186/s13011-015-0009-2

Moran, M. (2016, March 4). Why Aren't More Physicians Prescribing Buprenorphine? [news]. Retrieved April 24, 2017, from http://psychnews.psychiatryonline.org/doi/full/10.1176/appi.pn.2016.PP3a2?trendmd-shared=0

National Institute on Drug Abuse (NIDA) (2017). Overdose Death Rates. Retrieved 11 July 2017, from https://www.drugabuse.gov/related-topics/trends-statistics/overdose-death-rates

O'Connor, A. B. (2011). Nurse practitioners' inability to prescribe buprenorphine: Limitations of the Drug Addiction Treatment Act of 2000. *Journal of the American Academy of Nurse Practitioners*, *23*(10), 542–545.

Parran, T. V., Adelman, C. A., Merkin, B., Pagano, M. E., Defranco, R., Ionescu, R. A., & Mace, A. G. (2010). Long-term outcomes of office-based buprenorphine/naloxone maintenance therapy. Drug and Alcohol Dependence, 106(1), 56–60. https://doi.org/10.1016/j.drugalcdep.2009.07.013

Rodriguez, C. H. (2016, December 6). Medicaid Coverage For Addiction Treatment Varies Dramatically. Retrieved June 27, 2017, from http://khn.org/news/medicaid-coverage-for-addiction-treatment-varies-dramatically/

Rosenblatt, R. A., Andrilla, C. H. A., Catlin, M., & Larson, E. H. (2015). Geographic and specialty distribution of US physicians trained to treat opioid use disorder. *Annals of Family Medicine*, *13*(1), 23–26. https://doi.org/10.1370/afm.1735

Saab, M. M., Landers, M., & Hegarty, J. (2016). Males' Awareness of Benign Testicular Disorders: An Integrative Review. *American Journal of Men's Health*, 1557988315626508. https://doi.org/10.1177/1557988315626508

Schuckit, M. A. (2016). Treatment of Opioid-Use Disorders. *New England Journal of Medicine*, *375*(4), 357–368. https://doi.org/10.1056/NEJMra1604339

Stein, B. D., Pacula, R. L., Gordon, A. J., Burns, R. M., Leslie, D. L., Sorbero, M. J., … Dick, A. W. (2015). Where Is Buprenorphine Dispensed to Treat Opioid Use Disorders? The Role of Private Offices, Opioid Treatment Programs, and Substance Abuse Treatment Facilities in Urban and Rural Counties. *Milbank Quarterly*, *93*(3), 561–583. https://doi.org/10.1111/1468-0009.12137

Stein, B. D., Gordon, A. J., Dick, A. W., Burns, R. M., Pacula, R. L., Farmer, C. M., … Sorbero, M. (2015). Supply of buprenorphine waivered physicians: The influence of state policies. *Journal of Substance Abuse Treatment*, *48*(1), 104–111. https://doi.org/10.1016/j.jsat.2014.07.010

Suzuki, J., Connery, H. S., Ellison, T. V., & Renner, J. A. (2014). Preliminary survey of office-based opioid treatment practices and attitudes among psychiatrists never receiving buprenorphine training to those who received training during residency. *The American Journal on Addictions*, *23*(6), 618–622. https://doi.org/10.1111/j.1521-0391.2014.12143.x

Substance Abuse and Mental Health Administration (2016). Buprenorphine. Retrieved from https://www.samhsa.gov/medication-assisted-treatment/treatment/buprenorphine

Substance Abuse and Mental Health Services Administration (SAMHSA) (2017). Buprenorphine Waiver Management. Retrieved from https://www.samhsa.gov/medication-assisted-treatment/buprenorphine-waiver-management

Substance Abuse and Mental Health Services Administration (SAMHSA) (2015). Medication and Counseling Treatment. Retrieved from https://www.samhsa.gov/medication-assisted-treatment/treatment

Substance Abuse and Mental Health Administration (2014). Results from the 2013 National Survey on Drug Use and Health: Summary of National Findings. Retrieved from https://www.samhsa.gov/data/sites/default/files/NSDUHresultsPDFWHTML2013/Web/NSDUHresults2013.pdf

Thomas, C. P., Reif, S., Haq, S., Wallack, S. S., Hoyt, A., & Ritter, G. A. (2008). Use of buprenorphine for addiction treatment: perspectives of addiction specialists and general psychiatrists. *Psychiatric Services (Washington, D.C.)*, *59*(8), 909–916. https://doi.org/10.1176/ps.2008.59.8.909

Van Vleet, A., & Paradise, J. (2015, January 20). Tapping Nurse Practitioners to Meet Rising Demand for Primary Care. Retrieved June 21, 2017, from http://www.kff.org/medicaid/issue-brief/tapping-nurse-practitioners-to-meet-rising-demand-for-primary-care/

Vestal, C. (2016). In Fighting An Opioid Epidemic, Medication-Assisted Treatment Is Effective But Underused. *Health Affairs*, *35*(6), 1052–1057. https://doi.org/10.1377/hlthaff.2016.0504

Vestal, C (2017). Diverse Medicaid Rules Hurt in Fighting Addiction. Retrieved June 27, 2017, from http://pew.org/2e1cNkO

Vestal, C. (2016). In Drug Epidemic, Resistance to Medication Costs Lives. Retrieved June 27, 2017, from http://pew.org/1n8vaoP

Volkow, N. D., Frieden, T. R., Hyde, P. S., & Cha, S. S. (2014). Medication-Assisted Therapies — Tackling the Opioid-Overdose Epidemic. *New England Journal of Medicine*, *370*(22), 2063–2066. https://doi.org/10.1056/NEJMp1402780

Williams, A. R., & Bisaga, A. (2016). From AIDS to Opioids — How to Combat an Epidemic. *New England Journal of Medicine*, *375*(9), 813–815. https://doi.org/10.1056/NEJMp1604223

Williams, A. R., Nunes, E., & Olfson, M. (2017). To Battle The Opioid Overdose Epidemic, Deploy The “Cascade of Care” Model. Retrieved June 27, 2017, from http://healthaffairs.org/blog/2017/03/13/to-battle-the-opioid-overdose-epidemic-deploy-the-cascade-of-care-model/

Wiltz, T. (2016, October 7). Drug-Addiction Epidemic Creates Crisis in Foster Care. Retrieved July 12, 2017, from http://pew.org/2dIqCEJ

Yarborough, B. J. H., Stumbo, S. P., McCarty, D., Mertens, J., Weisner, C., & Green, C. A. (2016). Methadone, buprenorphine and preferences for opioid agonist treatment: A qualitative analysis. *Drug and Alcohol Dependence*, *160*, 112–118. https://doi.org/10.1016/j.drugalcdep.2015.12.031